THE ECONOMICS OF SELECTED VEGETABLE CROP PRODUCTION IN ALBERTA

Alberta
AGRICULTURE

Production Economics Branch
Agdex 821-60

Copies of this publication may be obtained from:

Print Media Branch
Alberta Agriculture
7000 - 113 Street
Edmonton, Alberta T6H 5T6
OR
Alberta Agriculture's district offices

1990 05 350

THE ECONOMICS OF SELECTED VEGETABLE CROP PRODUCTION IN ALBERTA

by
G. Nabi Chaudhary

Alberta Agriculture
Economic Services Division
Production Economics Branch
January, 1990

91-00072/

ACKNOWLEDGEMENTS

The author wishes to express sincere thanks to all fresh and processing vegetable producers and potato producers in Alberta who willingly provided valuable data for this study.

A great appreciation is expressed to the various Marketing Boards for the above crops for providing the names of study participants.

Special acknowledgement is due to the field staff for their assistance in obtaining the necessary data required for the completion of this study as well as for assistance provided by Reynold Jaipaul, Research Assistant, Production Economics Branch, in analysing the data is greatly appreciated.

TABLE OF CONTENTS

List of Tables iv

I Introduction 1

Objectives of the Study 2

Data Collection 3

Computation of Costs and Returns 3

Method of Analysis 6

II Vegetable Production in Alberta 7

Acreage and Production of Fresh Vegetables in Alberta 7

Acreage and Production of Processing Vegetables in Alberta 9

III Production Costs and Returns 11

Costs and Returns for Fresh Vegetables 13

Cabbage 13

Carrots 15

Corn 17

Costs and Returns for Processing Vegetables . . 18

Beans 18

Corn 20

IV Summary 25

LIST OF TABLES

TABLE		PAGE
1	Acreage and Production of Major Fresh Vegetables in Alberta, 1975 - 1988	8
2	Acreage and Production of Processing Vegetables in Alberta, 1985 - 1988	10
3	Costs and Returns for Cabbage Production	14
4	Costs and Returns for Carrot Production	16
5	Costs and Returns for Corn Production	19
6	Costs and Returns for Processing Beans Production	21
7	Costs and Returns for Processing Corn Production	23
8	Summary of Costs and Returns for Selected Vegetables	27

SECTION I

INTRODUCTION

Vegetable production in Alberta has fluctuated considerably during the last two decades. Total area under fresh and processing vegetables was 10,295 acres in 1975, which slightly decreased to 10,174 acres in 1988. Area under fresh vegetables in Alberta increased by over 222 per cent during the last 14 years, from 1,560 acres in 1975 to 5,029 acres in 1988. However, area under processing vegetables decreased by 41 per cent during the same period, from 8,735 acres in 1975 to 5,145 acres in 1988. Similarly, production of fresh and processing vegetables has fluctuated with acreage.

Overall production of fresh and processing vegetables has increased by about 30 per cent during the last fourteen years, from 40 952 tonnes in 1975 to 53 148 tonnes in 1988. However, the increase in production has not fulfilled the increased demand for local fresh produce. Therefore, imports of fresh produce has been increasing steadily.

The Alberta vegetable industry supplies only about 20 per cent of the fresh and processing vegetables consumed in the province. There is, therefore, a great potential for expanding vegetable production in Alberta, providing the economic parameters are favorable for such expansion.

There is no current data on production costs and returns for vegetables produced in Alberta. Information compiled in 1980 and 1981 is more or less obsolete because of changes in production techniques and input mix. Therefore, a need was felt to update the previously compiled production costs and returns data, as it would assist in establishing prices for the locally produced fresh and

processing vegetables. Moreover, such information would assist potential vegetable growers to establish profitability of different vegetable crops. Production costs and returns information based on the current situation could also assist in identifying cost cutting areas in order to enhance profitability.

This report is based on 1988 data obtained from 23 fresh and processing vegetable producers through a survey questionnaire. The report provides information on production costs and returns for fresh and processing vegetables.

Fresh vegetables included in the analysis are cabbage, carrots and corn. Processing vegetables included in this analysis are beans and corn. Data were also obtained for rutabagas, onions, and processing peas. The number of participants for these three crops was small, therefore, no averages were developed.

Objectives of the Study

The main objective of this report is to ascertain the economic parameters and the cost of producing vegetables in Alberta. Specifically, the objectives of this study are:

1. To determine production costs and returns for fresh and processing vegetables.

2. To provide the fresh produce industry, extension personnel, interest groups and the general public with factual cost of production for fresh and processing vegetables.

Data Collection

Data on production costs and returns for the 1988 crop year were collected from twenty-three fresh and processing vegetable producers across the province. Five potato producers provided data on their operations.

Following is the breakdown of the enterprises studied during the 1988 crop year:

Crop	Number of Enterprises Studied
Fresh Vegetables	
Cabbage	5
Carrots	7
Corn	6
Rutabagas	2
Onions	1
Processing Vegetables	
Beans	5
Corn	5
Peas	2

In order to preserve confidentiality of the data for each participant, no results of the analysis will be published for enterprises with less than four participants. Therefore, the report does not contain any production costs and returns information for rutabagas; onions; and processing peas.

Computation Of Costs And Returns

The cost summaries presented in this report are based on enterprise analysis. Namely, the expenses and income

associated with a given enterprise are allocated from the total farm activities. Producers generally grow more than one vegetable crop on relatively small acreages. Therefore, allocating the appropriate expenses for each crop on the farm is not easy, because expenses such as utilities, fuel, etc. are purchased on a total farm basis and require a proper allocation among the crops.

Cost accounting is far from being a uniform practice. There are many distinctly different procedures. In this report, following major cost categories are recognized:

Cash Costs - the expenses directly associated with the enterprise or crop. For instance fertilizer, seed, crop insurance, etc. are actual outlays during the year for specific crops. The allocation among the crops is not needed.

In addition to the above input costs, this category also includes actual outlays in the production year for the total farm, as the supplies and services are purchased for the whole farm and used within the farm as required. The allocation for each enterprise is determined by the amount or proportion of enterprise use of these services. For instance fuel, machinery costs, and/or repairs are allocated among the crops according to the use.

Labour Costs - two major groups in this category are hired paid labour and unpaid family labour costs. Hired paid labour cost is the actual wages paid for hired help. This could include family members. The operator's labour hours may vary from almost nil on some farms to the total input of labour on others. A statement of labour hours for the operator and unpaid family members was obtained for the particular enterprise and then an appropriate wage rate was applied. By this method, it is felt that the process of

valuing the family labour is equitable. The operator labour rate in 1988 was established at $7.50 per hour.

Although the operator and unpaid family labour cost is not an actual cash outlay, it should represent a fair compensation for living expenses of the family. The reward for management is shown in the final profit.

Capital Costs - this cost category can also be named "resource ownership cost". The previous cost categories must be paid regardless of the nature of the ownership of the capital, whether it's rented or owned. The capital cost category is composed of four major cost items: rent, taxes and insurance, depreciation, and interest payments. The cost of rent is the actual outlay of cash rent or the crop share value. When the land is rented, there is no capital interest payment.

To establish the depreciation cost, the participating growers were asked to indicate the market value of their investment. The depreciation was then calculated by applying 5 per cent on buildings and 10 per cent on machinery. The value of depreciation is slightly overestimated by this method. Another procedure is to base depreciation on the original value of investment. Original value, however was not available since the study focused on market value.

The paid interest is determined by calculating the 1988 composite interest actually paid by the enterprise on all long-term borrowed funds. The interest on operating loans is included under cash costs.

Returns - the return to equity is the residual value when the sum of production costs is deducted from gross income. This annual value can then be expressed as a

percentage of the owner invested equity and serves as an indication of the economic well being of the enterprise for a given year.

In order to satisfy needs of individual study participants, emphasis in this report is on the weighted average cost. The cost components were arranged in such a way as to avoid discrepancies between individual records. For example, if rent was included in the direct cost category as a cash cost, then the total direct cost would be higher for growers who rent land, and their capital cost would be small. This was corrected by including rent in capital costs.

Method Of Analysis

Many approaches may be used to establish the cost of production on the farm. The approach taken in this study is to show the actual cost outlays taken from the farm records for the 1988 production year.

The data were collected from a random sample of vegetable growers in the province for the 1988 calendar year. A questionnaire was used to obtain data for fresh and processing vegetables and potatoes.

Data for this study were analyzed using the Farm Business Enterprise Analysis Program.

SECTION II

VEGETABLE PRODUCTION IN ALBERTA

Production of fresh and processing vegetables in Alberta has varied considerably during the last several years. Combined area under fresh and processing vegetables was 10,295 acres in 1975 which increased to 9,998 acres in 1987. In 1988 area under fresh vegetables and potatoes was 10,174 acres. Fresh vegetable crops which showed significant increases in area were cabbage, carrots and fresh corn. Area under cucumbers, onions and rutabagas also showed a small increase as well.

Acreage And Production of Fresh Vegetables in Alberta

Table 1 provides details on the area and production of six major fresh vegetables produced in Alberta. In 1975, area under fresh vegetables was at 1,560 acres which continued to increase in the following years. In 1982 it increased to 2,410 acres, an increase of about 54 per cent over the area in 1975. In 1985, area under the six major fresh vegetables more than doubled to 5,137 acres over the area in 1982. In 1987, it increased to 5,592 acres, the highest area under fresh vegetables in Alberta. In 1988, it decreased by about 10 per cent to 5,029 acres. Total production of fresh vegetables also showed a very significant increase during the last fourteen years. It reached the highest production level in 1986 at over 36 400 tonnes, up from over 12 000 tonnes in 1975. In 1988, overall production of fresh vegetables decreased to 29 294 tonnes from 31 058 tonnes in 1987.

TABLE 1:

ACREAGE AND PRODUCTION OF MAJOR FRESH VEGETABLES IN ALBERTA, 1975 - 1988

CROP	1975		1976		1977		1978		1979		1980		1981	
	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes
Cabbage	210	2 756	260	2 273	260	2 585	300	2 779	350	3 232	380	4 309	450	4 491
Carrots	390	4 603	310	4 335	370	5 096	370	4 843	270	4 491	420	5 806	500	4 899
Corn, Fresh	650	2 040	650	1 445	510	1 575	600	1 590	650	1 865	760	1 595	760	2 025
Cucumbers	100	351	130	337	130	189	130	255	140	261	150	286	150	295
Onions	50	272	170	1 696	120	1 676	120	1 235	50	463	200	1 687	220	2 232
Rutabagas	160	2 049	150	1 876	150	2 279	150	2 324	160	2 145	160	2 395	160	2 223
TOTAL	1,560	12 071	1,670	11 962	1,640	13 400	1,670	13 026	1,720	12 457	2,070	16 078	2,240	16 165

CROP	1982		1983		1984		1985		1986		1987		1988	
	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes
Cabbage	450	4 680	450	2 630	600	2 810	921	4 270	779	7 917	1,025	6 996	881	7 038
Carrots	700	5 535	750	8 165	650	3 265	1,070	6 805	758	10 070	1,096	7 351	980	5 863
Corn, Fresh	700	1 535	690	1 930	690	2 355	1,020	2 770	3,004	14 204	2,769	12 764	2,573	13 506
Cucumbers	170	360	200	490	200	610	206	430	275	929	248	384	215	742
Onions	220	1 525	210	1 765	210	1 720	246	1 625	187	1 612	275	2 441	238	1 461
Rutabagas	170	1 695	230	3 485	150	1 495	298	1 070	134	1 686	179	1 122	142	684
TOTAL	2,410	15 330	2,530	18 465	2,500	12 255	3,760	16 970	5,137	36 418	5,592	31 058	5,029	29 294

Source: Statistics Canada, Fruit and Vegetable Production, Catalogue 22-003, Statistics Canada, Ottawa, 1975-1981.

Acreage and Production of Processing Vegetables in Alberta

Table 2 provides information on processing vegetables which shows that area and production of these crops have fluctuated considerably over the last several years. Area under processing vegetables was 8,735 acres in 1975. In 1985, it decreased to 6,096 acres and continued to decrease to 4,406 in 1987. In 1988, area under processing vegetables increased to 5,145 acres. Similarly, production of processing vegetables has fluctuated with acreage. Details on area and production of processing vegetables in Alberta for the years 1985 to 1988 are presented in Table 2.

TABLE 2:

ACREAGE AND PRODUCTION OF PROCESSING VEGETABLES
IN ALBERTA 1985 - 1988

CROP	1985		1986		1987		1988	
	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes	Acres	Tonnes
Beans	570	1 435	293	373	202	512	155	574
Beets	25	227	12	112	18	104	36	482
Carrots	44	864	55	1 106	52	1 064	162	4 342
Corn	2,386	17 727	1,870	12 251	1,23	10 918	1,966	13 369
Peas	3,071	4 318	2,254	2 676	2,411	2 932	2,826	5 087
TOTAL	6,096	24 571	4,484	16 518	4,406	15 530	5,145	23 854

Source: Statistics Branch
Alberta Agriculture, Edmonton, Alberta

SECTION III

PRODUCTION COSTS AND RETURNS

This section of the report provides detailed information on average production costs and returns for fresh and processing vegetables and seed potatoes for the 1988 crop year. The data obtained from individual participants contained information for several vegetable crops. However, group averages were developed only for those enterprises for which number of participants was at least four or greater.

Detailed information on production costs and returns is presented for the following crops:

i) Fresh Vegetables
   - cabbage
   - carrots
   - corn

ii) Processing Vegetables
   - beans
   - corn

Average production costs and returns data for fresh and processing vegetables are given in Tables 4 to 8. Results are presented in different parts for the convenience of the study participants and users of the report.

PART A: This part provides information on income or receipts for different crops. Area per farm is simply the average number of acres of a crop grown by the study participants in that particular group. Yield per acre is the weighted average of saleable production (per acre) for the acres under study. Gross return per acre consists of an estimated crop value for the particular crop under study and miscellaneous receipts such as crop insurance, and/or any other payments, etc.

PART B: This part lists costs which include all of the out-of-pocket costs (cash costs). Because of the producers' interest in knowing their out-of-pocket costs for each basic unit of production, the costs were broken into as much detail as possible. The most significant inputs which make up major portions of such costs are seed, fertilizer, chemicals, power machinery fuel and repairs, utilities and hired labour. Details on these input costs and other components of such costs are given in tables for each enterprise studied during the 1988 crop year. When costs for family and operator labour are included in cash costs, then this part is called variable cost.

PART C: Total capital costs represent cash rent/crop share, taxes and insurance, equipment and building depreciation, and interest paid on capital.

PART D: This part lists total production costs consisting of variable costs (cash costs plus family and operator labour) and capital costs.

PART E: This part shows contribution margin, i.e., gross revenue less variable costs, return to equity, and return to investment.

Costs and Returns for Fresh Vegetables

Cabbage:

Area under cabbage has increased considerably during the last 14 years, i.e. from 210 acres in 1974 to 881 acres in 1988. Similarly production of cabbage for fresh market purposes has increased from 2 756 tonnes in 1975 to 7 038 tonnes in 1988.

For the 1988 study, five (5) growers provided information on cabbage production costs and returns. Average area per study participant was 32.3 acres in 1988. Average cabbage yield was 11.54 tonnes per acre with returns estimated at $172.22 per tonne or $2,352.16 per acre. Average receipts per tonne of cabbage produced and per acre are given in Table 4.

Cabbage production is very labour and machinery intensive as can be noted from the cash costs in Table 4. Hired labour amounted to $546 per acre or $47.33 per tonne or about 31 per cent of the cash costs. Machinery operating costs for cabbage production were $152.60 per acre or about 9 per cent of the cash costs. Other cash costs, which included sacks/bags, tags, brokerage fee and association dues amounted to $391.46 per acre or $33.92 per tonne. Input costs (seed, fertilizer and chemicals) averaged $449.50 per acre in 1988. Because of the high use of farm machinery in cabbage production, the machinery and building depreciation estimate for the 1988 crop year amounted to $203.80 per acre. Thus total cash costs for cabbage

TABLE 3:

COSTS AND RETURNS FOR CABBAGE PRODUCTION

RETURNS

		Total	Per Acre	Per Tonne
	Acres Cropped	32.30		
		- - - - -	Dollars - - - - -	
	Crop Sales - Imputed Value of Production	74,058.70	2,292.84	167.88
	Insurance Receipts	1,640.00	50.77	
	Miscellaneous Receipts	276.00	8.54	.
A.	GROSS RETURN	75,974.70	2,352.16	172.22
	CASH COSTS			
	Seed	11,397.20	352.85	
	Fertilizer	1,807.60	55.96	
	Chemicals	1,314.20	40.69	
	Hail/Crop Insurance	2,961.00	91.67	
	Fuel (Machinery)	1,949.00	60.34	
	Repairs - Machine	2,850.00	88.24	
	Repairs - Building	130.00	4.02	
	Utilities	1,277.00	39.54	
	Custom Work	1,400.00	43.34	
	Miscellaneous[1]	12,694.00	391.46	
	Operating Interest Paid	2,096.40	64.90	
	Hired Labour	17,641.80	546.19	
	TOTAL CASH COST	57,468.20	1,779.20	130.27
	Family and Operator Labour	3,249.80	100.61	7.36
B.	TOTAL VARIABLE COST	60,718.00	1,879.81	137.63
	CAPITAL COSTS			
	Cash Rent/Crop Share	438.00	13.56	
	Taxes and Insurance	1,064.38	32.95	
	Equipment and Building Depreciation	6,582.76	203.80	
	Paid Capital Interest	10,795.40	344.22	
C.	TOTAL CAPITAL COST	18,880.55	584.54	42.80
D.	TOTAL PRODUCTION COST (B+C)	79,598.55	2,464.35	180.43
E.	Return Over Variable Cost (A-B)	15,526.70	472.34	34.58
	Return to Equity (A-D)	(3,623.85)	(112.19)	(8.21)
	Return to Investment	7,171.55	222.03	16.26
	INVESTMENT:			
	Land	21,600.00	668.73	
	Machinery	25,401.00	786.41	
	Irrigation Equipment	17,230.00	533.44	
	Buildings	40,000.00	1,238.39	
	TOTAL INVESTMENT	104,231.00	3,226.97	236.27
	MANAGEMENT:			
	Yield Per Acre	11.54 Tonnes		
	Equity	60.13 %		

[1] Includes accounting, marketing charges, soil test, leasing and rental, etc.

production amounted to $1,779.20 per acre or $130.27 per tonne.

Other costs which included equity in land, improvements, machinery and supplies, interest on long-term debt, were $584.54 per acre or $42.80 per tonne. Total production costs based on cash costs and other costs were estimated to be $2,464.35 per acre or $180.43 per tonne during the 1988 cabbage production year.

Return over cash costs was positive by $472.34 per acre, or $34.58 per tonne. Return to management which is based on gross income less total production costs was negative by $112.19 per acre ($8.21/tonne).

Average investment is given at the bottom of Table 4. Average value of land (owned) as provided by the cabbage growers amounted to a little over $1,000 per acre for 1988. Power machinery and irrigation equipment accounted for 41 per cent of the investment, or $1,319.85 per acre. Buildings and improvement investment was $1,238 per acre, or about 38 per cent of the total investment.

Carrots:

The area under carrots produced for the fresh market has more than doubled during the last 14 years, i.e. from 390 acres in 1975 to 980 acres in 1988, an average increase of about 11 per cent per year. In 1988, average yield per acre reported by the seven study participants was somewhat lower compared to previous crop years. Average total receipts amounted to $1,497 per acre in 1988. Details on area under fresh carrots, cash costs, capital costs, and investment are presented in Table 5.

TABLE 4:

COSTS AND RETURNS FOR CARROT PRODUCTION

RETURNS

		Total	Per Acre	Per Tonne
	Acres Cropped	104.84		
		- - - - -	Dollars - - - - -	
	Crop Sales - Imputed Value of Production	156,127.79	1,488.96	160.40
	Insurance Receipts			
	Miscellaneous Receipts	830.29	7.92	0.86
A.	GROSS RETURN	156,958.06	1,496.88	161.26
	CASH COSTS			
	Seed	18,639.71	177.76	
	Fertilizer	7,026.29	67.01	
	Chemicals	9,978.86	95.17	
	Hail/Crop Insurance	731.43	6.98	
	Fuel (Machinery)	3,142.37	29.97	
	Repairs - Machine	6,491.16	61.90	
	Repairs - Building	771.43	7.36	
	Utilities	2,663.71	25.40	
	Custom Work	5,011.00	47.79	
	Miscellaneous[1]	6,190.14	59.03	
	Operating Interest Paid	2,023.86	19.30	
	Hired Labour	21,054.86	200.80	
	TOTAL CASH COST	83,724.81	798.47	86.02
	Family and Operator Labour	3,820.00	36.43	3.92
B.	TOTAL VARIABLE COST	87,544.81	834.90	89.94
	CAPITAL COSTS			
	Cash Rent/Crop Share	11,200.00	106.81	
	Taxes and Insurance	1,190.48	11.35	
	Equipment and Building Depreciation	16,440.24	156.79	
	Paid Capital Interest	13,645.43	130.13	
C.	TOTAL CAPITAL COST	42,276.15	405.09	43.64
D.	TOTAL PRODUCTION COST (B+C)	130,020.96	1,239.98	133.58
E.	Return Over Variable Cost (A-B)	69,413.26	661.98	71.31
	Return to Equity (A-D)	26,937.12	256.89	27.67
	Return to Investment	40,582.54	387.03	41.69
	INVESTMENT:			
	Land	60,071.43	572.89	
	Machinery	93,119.14	888.06	
	Irrigation Equipment	34,187.57	326.04	
	Buildings	44,276.86	422.24	
	TOTAL INVESTMENT	231,653.00	2,209.22	238.00
	MANAGEMENT:			
	Yield Per Acre	9.13 Tonnes		
	Equity	75.61 %		

[1]Includes accounting, marketing charges, soil test, leasing and rental, etc.

Cash costs for carrot production amounted to $798 per acre, or $86 per tonne. The most significant cost items comprising direct cash costs were paid labour, at $201 per acre, followed by seed costs at $178 per acre, chemicals at $95 per acre and fertilizer at $67 per acre. Building repairs amounted to about $62 per acre. Cash rent/crop share reported by the study participants was about $107 per acre. Equipment and building depreciation was $158 per acre. Interest paid on capital in 1988 was $130 per acre. Average family and operator labour was about $36 per acre, or $4 per tonne. Average total capital cost for fresh carrot production was $405 per acre.

Total production cost was obtained by summing the variable costs and capital costs (Table 5). Total production cost for fresh carrot production amounted to $1,240 per acre, or $133.58 per tonne. Investment on carrot producing farms was $2,209 per acre.

Return to capital, or contribution margin was $662 per acre, or $71 per tonne of carrots produced. Return to equity amounted to $257 per acre, or $28 per tonne. Return to investment was about 17.5 per cent.

Corn:

The area under corn for the fresh market has fluctuated considerably over the last several years. Until the mid-eighties, area under corn had been between 600 to 1,700 acres. In 1986, area under corn increased to about 3,000 acres. However, in 1987 and 1988, area under corn for fresh market decreased to 2,769 and 2,573 acres, respectively. Average yield reported by the six study participants was about 3.7 tonnes per acre in 1988, which was significantly lower than the provincial average yield of 5.3 tonnes per acre.

Table 6 presents area under corn, crop sales and other receipts during the 1988 crop year. Average cash costs in 1988 for fresh corn production amounted to $464 per acre or $126 per tonne. Hired labour accounted for 29 per cent of the total cash costs. Input costs for seed, fertilizer and chemicals were $142 per acre or 31 per cent of the direct cash costs. Cash rent/crop share amounted to $123 per acre. Equipment and building depreciation was $140 per acre, followed by capital interest payments at $128 per acre.

Total production costs were $863 per acre, or $234 per tonne of fresh corn produced. Return to capital, or contribution margin amounted to $139 per acre, or $38 per tonne. Average return to equity was negative by $260 per acre, or $71 per tonne. Return to investment was also negative at $117 per acre, or $32 per tonne.

Total investment for fresh corn production was $1,573 per acre, or $428 per tonne. Machinery and building investment comprised about 76 per cent of total investment.

Details on management factors, investment and other cost items are given in Table 6.

Costs and Returns for Processing Vegetables

Beans:

Acreage under processing beans has also varied considerably during the last several years. Five (5) processing bean producers from southern Alberta provided costs and returns data for the 1988 crop. Average yield reported by the study participants was 2.62 tonnes per acre. Total receipts per acre amounted to $999, or $381 per tonne.

TABLE 5:

COSTS AND RETURNS FOR CORN PRODUCTION

RETURNS

		Total	Per Acre	Per Tonne
	Acres Cropped	63.17		
		- - - - - Dollars - - - - -		
	Crop Sales - Imputed Value of Production	36,389.11	576.08	156.69
	Insurance Receipts	229.17	3.63	
	Miscellaneous Receipts	1,417.00	22.43	.
A.	GROSS RETURN	38,035.28	602.14	163.78
CASH COSTS				
	Seed	2,663.67	42.17	
	Fertilizer	4,253.67	67.34	
	Chemicals	2,079.00	32.91	
	Hail/Crop Insurance	583.33	9.23	
	Fuel (Machinery)	2,546.32	40.31	
	Repairs - Machine	4,697.34	74.36	
	Repairs - Building	166.67	2.64	
	Utilities	838.00	13.27	
	Custom Work			
	Miscellaneous[1]	928.50	14.70	
	Operating Interest Paid	1,202.83	19.04	
	Hired Labour	8,280.83	131.09	
	TOTAL CASH COST	28,240.16	447.07	121.60
	Family and Operator Labour	1,040.00	16.46	
B.	TOTAL VARIABLE COST	29,280.16	463.53	125.96
CAPITAL COSTS				
	Cash Rent/Crop Share	7,791.67	123.35	
	Taxes and Insurance	484.67	7.67	
	Equipment and Building Depreciation	8,813.21	139.52	
	Paid Capital Interest	8,115.50	128.48	
C.	TOTAL CAPITAL COST	25,205.04	399.02	108.53
D.	TOTAL PRODUCTION COST (B+C)	54,485.20	862.55	234.49
E.	Return Over Variable Cost (A-B)	8,755.12	138.61	37.66
	Return to Equity (A-D)	(16,450.10)	(260.41)	(70.76)
	Return to Investment	(8,334.60)	(131.40)	(35.85)
	INVESTMENT:			
	Land	19,000.00	300.79	
	Machinery	42,848.00	678.33	
	Irrigation Equipment	32,945.83	521.57	
	Buildings	4,583.33	72.56	
	TOTAL INVESTMENT	99,377.17	1,573.25	427.91
	MANAGEMENT:			
	Yield Per Acre	3.68 Tonnes		
	Equity	76.09%		

[1] Includes accounting, marketing charges, soil test, leasing and rental, etc.

Details on average area per farm, crops sales and miscellaneous receipts are presented in Table 7.

Average cash costs for production of beans amounted to $391 per acre, or $149 per tonne. Major components were custom work and specialized labour, followed by seed, hail/crop insurance and chemicals.

Other production costs (capital costs) for processing beans are given in Table 7, part C. These costs include cash rent/crop share; taxes and insurance; equipment and building depreciation; and interest paid on capital. These costs amounted to about $200 per acre, or $131 per tonne. Total production costs (cash and capital) were $628 per acre or $240 per tonne in 1988. Return over variable cost (family and operator labour plus cash costs) was $571 per acre, or $218 per tonne. Return to equity was $371 per acre or $142 per tonne. Average labour requirement (hired and operator labour) was estimated at about 12 hours per acre.

Average investment data for processing beans are presented in Table 7 under investment. Investment for processing bean production amounted to $2,070 per acre. Land accounted for 41 per cent of total investment at $843 per acre. Investment for machinery, irrigation equipment and buildings amounted to $1,227 per acre or $468 per tonne of beans produced.

Corn:

Area under processing corn in southern Alberta has shown considerable fluctuation during the last four years. Processing corn is grown under contract with the canneries located in southern Alberta. In 1985, area under processing corn was 2,386 acres, which decreased to 1,870 acres in

TABLE 6:

COSTS AND RETURNS FOR PROCESSING BEANS PRODUCTION

RETURNS

		Total	Per Acre	Per Tonne
	Acres Cropped	35		
		- - - - -	Dollars - - - - -	
	Crop Sales - Imputed Value of Production	33,797.98	956.66	368.57
	Insurance Receipts	1,022.00	29.20	
	Miscellaneous Receipts	156.80	4.48	.
A.	GROSS RETURN	34,976.78	999.34	381.43
	CASH COSTS			
	Seed	2,409.60	68.85	
	Fertilizer	1,141.80	32.62	
	Chemicals	1,244.60	35.56	
	Hail/Crop Insurance	1,098.40	31.38	
	Fuel (Machinery)	771.40	22.04	
	Repairs - Machine	532.00	15.20	
	Repairs - Building			
	Utilities	633.40	18.10	
	Custom Work	3,440.40	98.30	
	Miscellaneous[1]	87.60	2.50	
	Operating Interest Paid	412.40	11.78	
	Hired Labour	1,925.00	55.00	
	TOTAL CASH COST	13,696.40	391.33	149.36
	Family and Operator Labour	1,295.60	37.02	
B.	TOTAL VARIABLE COST	14,992.00	428.35	163.49
	CAPITAL COSTS			
	Cash Rent/Crop Share	1,200.00	34.29	
	Taxes and Insurance	1,102.16	31.49	
	Equipment and Building Depreciation	3,590.60	102.59	
	Paid Capital Interest	1,093.60	31.25	
C.	TOTAL CAPITAL COST	6,986.37	199.61	76.19
D.	TOTAL PRODUCTION COST (B+C)	21,978.57	627.45	239.68
E.	Return Over Variable Cost (A-B)	19,984.58	570.99	217.93
	Return to Equity (A-D)	12,998.21	371.38	141.75
	Return to Investment	14,091.81	402.63	153.68
	INVESTMENT:			
	Land	29,500.00	842.86	
	Machinery	15,897.00	454.20	
	Irrigation Equipment	7,650.00	218.57	
	Buildings	19,400.00	554.29	
	TOTAL INVESTMENT	72,447.00	2,069.91	790.04
	MANAGEMENT:			
	Yield Per Acre	2.62 Tonnes		
	Equity	83.21%		

[1] Includes accounting, marketing charges, soil test, leasing and rental, etc.

1986, and 1,723 acres in 1987. Although area under processing corn increased to 1,966 acres in 1988, it was still well below the 1985 acreage. Five (5) processing corn growers provided detailed information on costs and returns for the 1988 crop. Average area per farm under processing corn was 37 acres, with an average yield of 6.93 tonnes per acre. Estimated total receipts for processing corn amounted to $628 per acre, or $91 per tonne.

Average cash costs for processing corn production are presented in Table 8, Part B. Material costs, which include seed, fertilizer and chemicals, accounted for about 32 per cent of the total cash cost, at $102 per acre. Charges for custom work were $132 per acre, or about 41 per cent of the total cash cost. Machinery fuel and repair costs (machinery and building) were 15 per cent of the cash costs at $48 per acre.

Capital costs are comprised of cash rent, taxes and insurance, equipment and building depreciation, and interest paid on capital. These costs are presented in Part C of Table 8. Average equipment and building depreciation was $111 per acre, or about 20 per cent of the total production cost. Average capital costs amounted to $33 per tonne for processing corn production.

Total production cost for processing corn was calculated at $540 per acre, or $88 per tonne (Table 8). Cash costs (excluding family and operator labour) accounted for about 60 per cent of the total production cost at $321 per acre, or $52 per tonne. Operators labour was valued at $18 per acre.

Details on average investment for processing corn production for land, machinery irrigation equipment and buildings are presented in Table 8. Investment in land was

TABLE 7:

COSTS AND RETURNS FOR PROCESSING CORN PRODUCTION

RETURNS

		Total	Per Acre	Per Tonne
	Acres Cropped	37		
		- - - - -	Dollars - - - - -	
	Crop Sales - Imputed Value of Production	23,076.90	623.70	90.00
	Insurance Receipts	137.72	3.72	
	Miscellaneous Receipts	40.00	1.08	.
A.	GROSS RETURN	23,254.62	628.50	90.69
	CASH COSTS			
	Seed	1,369.00	37.00	
	Fertilizer	1,742.80	47.10	
	Chemicals	676.40	18.28	
	Hail/Crop Insurance	721.20	19.49	
	Fuel (Machinery)	944.00	36.11	
	Repairs - Machine	840.00	22.70	
	Repairs - Building			
	Utilities	450.00	12.16	
	Custom Work	4,888.40	132.12	
	Miscellaneous[1]	265.40	7.17	
	Operating Interest Paid			
	Hired Labour	1,117.77	30.21	
	TOTAL CASH COST	13,014.97	351.76	50.76
	Family and Operator Labour	658.20	17.79	
B.	TOTAL VARIABLE COST	13,673.17	369.55	53.33
	CAPITAL COSTS			
	Cash Rent/Crop Share	690.00	18.65	
	Taxes and Insurance	613.80	16.59	
	Equipment and Building Depreciation	4,100.10	110.81	
	Paid Capital Interest	2,034.00	54.97	
C.	TOTAL CAPITAL COST	7,437.90	201.02	29.01
D.	TOTAL PRODUCTION COST (B+C)	21,111.07	570.57	82.34
E.	Return Over Variable Cost (A-B)	9,581.45	258.95	37.37
	Return to Equity (A-D)	2,143.55	57.93	8.36
	Return to Investment	4,177.55	112.91	16.29
	INVESTMENT:			
	Land	36,100.00	975.68	
	Machinery	15,650.00	422.97	
	Irrigation Equipment	14,690.00	397.03	
	Buildings	13,750.00	371.62	
	TOTAL INVESTMENT	80,190.00	2,167.30	352.19
	MANAGEMENT:			
	Yield Per Acre	6.93 Tonnes		
	Equity	69.32%		

[1]Includes accounting, marketing charges, soil test, leasing and rental, etc.

$976 per acre, or 45 per cent of total investment per acre. Average machinery and building investment for processing corn production was $423 and $372 per acre, respectively. Average investment per farm for irrigation equipment was at $397 per acre. Total investment for processing corn production was estimated at $2,167 per acre.

SECTION IV

SUMMARY

This report provides production costs and returns information for three major fresh vegetables (cabbage, corn and carrots), two processing vegetables (beans and corn), and seed potatoes. A summary of costs and returns for the above crops is presented in Table 10. Analysis of the data showed a considerable variation in input-mix and yield per acre. It is suggested that the information contained in this report should be used as a guideline to evaluate the performance of a particular enterprise.

Following observations can be made from the results presented in this report:

1. Cabbage is the most labour and machinery intensive crop compared to other vegetables and seed potatoes. Labour costs (hired and operator) for cabbage production were $647 per acre or $47 per tonne. For other crops labour costs ranged from $18 to $237 per acre.

2. Capital costs were also the highest at $585 per acre for cabbage production followed by fresh carrots ($405 per acre).

3. All of the fresh and processing vegetables studied, including seed potatoes, showed positive return over variable costs.

4. Two of the crops, cabbage and fresh corn, showed negative return to equity or management, i.e., total production costs exceeded total receipts.

Other vegetables and seed potatoes exhibited positive return to equity (management).

5. Processing beans were the most profitable crop followed by fresh carrots.

Conclusions

The size of the Alberta vegetable industry is limited by numerous factors. There are, however, two readily identifiable factors important for the vegetable industry growth, namely seasonality of production and economic conditions. While the former is difficult to correct or reverse, the latter provides an avenue for improvements. The present production capacity of the fresh and processing vegetables is far below the demand requirements. The economic forces can indeed dictate the desirable expansion of the industry.

The major objective of this study was to identify the economic parameters for the production of some major vegetables, namely cabbage, fresh carrots, beans, processing corn and seed potatoes.

Identification of the various cost components would greatly assist each study participant to compare his/her records with the group averages. Furthermore, it is hoped that this information will enable each grower to become more aware of his/her production costs and to use this information as a tool for future management decisions.

TABLE 8:

SUMMARY OF COSTS AND RETURNS FOR
SELECTED VEGETABLES AND POTATOES

	Fresh Vegetables			Processing Vegetables	
	Cabbage	Carrots	Corn	Beans	Corn
Acres Cropped	32.3	104.8	63.2	35	37
Yield Per Acre (tonnes)	11.54	9.13	3.68	2.62	6.93
Receipts Per Acre ($)[1]	2,352.16	1,496.88	602.14	999.34	628.50
CASH COSTS	- - - - - - - - Dollars Per Acre - - - - - -				
Material Costs[2]	449.50	399.94	142.42	137.03	102.38
Machine Operating[3]	152.02	91.87	114.67	37.24	58.81
Hired Labour	546.19	200.80	131.09	55.00	30.21
Miscellaneous[4]	631.49	105.86	58.89	162.06	160.36
A. TOTAL VARIABLE COST	1,879.81	834.90	463.53	428.35	369.55
CAPITAL COSTS					
Cash Rent/Crop Share	13.56	106.81	123.35	34.29	18.65
Taxes & Insurance	32.95	11.35	7.67	31.49	16.59
Equipment & Bldg. Deprec.	203.80	156.79	139.52	102.59	110.81
Paid Capital Interest	344.22	130.13	128.48	31.25	54.97
B. TOTAL CAPITAL COSTS	584.54	405.09	399.02	199.61	201.02
TOTAL PRODUCTION COST (A+B)	2,464.35	1,239.98	862.55	627.45	570.57
Return Over Variable Costs	472.34	661.98	138.61	570.99	258.95
Return to Equity	(112.19)	256.89	(260.41)	371.38	57.93
Return to Investment	222.03	387.03	(131.40)	402.63	112.91

[1]Includes estimated value of crop, insurance receipts and other payments (if any).

[2]Includes costs for seed, chemicals and fertilizer.

[3]Includes fuel and machinery repairs.

[4]Includes changes for custom work, crop insurance fees, building repairs utilities, taxes, freight charges and marketing, etc.